


CLAIMS:

What is claimed is:

1. A method of treating a subterranean zone, comprising:
providing a water-based, viscous treating fluid composition comprising water, a viscosity increasing polymer and a water-soluble strongly delayed polymer breaker composition, comprising a hydrogen peroxide source, a ferrous ion source and a chelating agent;
introducing the viscous treating fluid composition into the subterranean zone through a well bore, penetrating the subterranean zone, and
allowing the strongly delayed polymer breaker composition to break the viscous treating fluid composition into a thin fluid of reduced viscosity.
2. The method of treating a subterranean zone according to claim 1 wherein the hydrogen peroxide source is selected from the group consisting of sodium perborate tetrahydrate and hydrogen peroxide.
3. The method of treating a subterranean zone according to claim 1 wherein the ferrous ion source is selected from the group consisting of iron (II) sulfate heptahydrate, iron (II) chloride and iron (II) gluconate.
4. The method of treating a subterranean zone according to claim 1 wherein the chelating agent is selected from the group consisting of citric acid, sodium citrate and iminodiacetic acid.
5. The method of treating a subterranean zone according to claim 1 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar excess of the chelating agent relative to the ferrous ion source.
6. The method of treating a subterranean zone according to claim 5 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar ratio of the chelating agent to the ferrous ion source of from 3:1 to 6:1.

7. The method of treating a subterranean zone according to claim 1 wherein the water-soluble, strongly delayed polymer breaker composition further comprises sodium chloride.
8. The method of treating a subterranean zone according to claim 1 wherein the water-soluble, strongly delayed polymer breaker composition has a pH in the range of from about 3 to about 7.
9. The method of treating a subterranean zone according to claim 1 wherein the viscosity increasing polymer comprises a polysaccharide.
10. The method of treating a subterranean zone according to claim 9 wherein the viscosity increasing polymer comprises a polysaccharide selected from the group consisting of biopolymers and modified gums or celluloses and derivatives thereof.
11. The method of treating a subterranean zone according to claim 10 wherein the viscosity increasing polymer comprises xanthan gum.
12. The method of treating a subterranean zone according to claim 1 wherein the temperature of the subterranean zone ranges from about 80°F to about 150°F.
13. A method of treating a subterranean zone, comprising:
 - providing a water-based, non-viscous treating fluid composition comprising water and a water-soluble strongly delayed polymer breaker composition, comprising a hydrogen peroxide source, a ferrous ion source and a chelating agent;
 - introducing the non-viscous treating fluid composition by way of an open hole well bore penetrating the subterranean zone, wherein the well bore has filter cake on the walls thereof, and
 - allowing the strongly delayed polymer breaker composition to break the filter cake whereby the treating fluid and the broken filter cake can be removed from the subterranean zone.

14. The method of treating a subterranean zone according to claim 13 wherein the hydrogen peroxide source is selected from the group consisting of sodium perborate tetrahydrate and hydrogen peroxide.
15. The method of treating a subterranean zone according to claim 13 wherein the ferrous ion source is selected from the group consisting of iron (II) sulfate heptahydrate, iron (II) chloride and iron (II) gluconate.
16. The method of treating a subterranean zone according to claim 13 wherein the chelating agent is selected from the group consisting of citric acid, sodium citrate and iminodiacetic acid.
17. The method of treating a subterranean zone according to claim 13 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar excess of the chelating agent relative to the ferrous ion source.
18. The method of treating a subterranean zone according to claim 17 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar ratio of the chelating agent to the ferrous ion source of from 3:1 to 6:1.
19. The method of treating a subterranean zone according to claim 13 wherein the water-soluble, strongly delayed polymer breaker composition further comprises sodium chloride.
20. The method of treating a subterranean zone according to claim 13 wherein the water-soluble, strongly delayed polymer breaker composition has a pH in the range of from about 3 to about 7.
21. The method of treating a subterranean zone according to claim 13 wherein the temperature of the subterranean zone ranges from about 80°F to about 150°F.

22. A method of treating a subterranean zone, comprising: 
providing a water-based, viscous treating fluid composition comprising water, a viscosity increasing polymer and a water-soluble strongly delayed polymer breaker composition, comprising a hydrogen peroxide source, a ferrous ion source and a chelating agent;
introducing the viscous treating fluid composition into the subterranean zone by way of an open hole well bore penetrating the subterranean zone, wherein the well bore has filter cake on the walls thereof, and
allowing the strongly delayed polymer breaker composition in the viscous treating fluid to break the viscous treating fluid and the filter cake whereby the broken treating fluid and the broken filter cake can be removed from the subterranean zone.
23. The method of treating a subterranean zone according to claim 22 wherein the hydrogen peroxide source is selected from the group consisting of sodium perborate tetrahydrate and hydrogen peroxide.
24. The method of treating a subterranean zone according to claim 23 wherein the ferrous ion source is selected from the group consisting of iron (II) sulfate heptahydrate, iron (II) chloride and iron (II) gluconate.
25. The method of treating a subterranean zone according to claim 22 wherein the chelating agent is selected from the group consisting of citric acid, sodium citrate and iminodiacetic acid.
26. The method of treating a subterranean zone according to claim 22 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar excess of the chelating agent relative to the ferrous ion source.
27. The method of treating a subterranean zone according to claim 26 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar ratio of the chelating agent to the ferrous ion source of from 3:1 to 6:1.

28. The method of treating a subterranean zone according to claim 22 wherein the water-soluble, strongly delayed polymer breaker composition further comprises sodium chloride.
29. The method of treating a subterranean zone according to claim 22 wherein the water-soluble, strongly delayed polymer breaker composition has a pH in the range of from about 3 to about 7.
30. The method of treating a subterranean zone according to claim 22 wherein the viscosity increasing polymer comprises a polysaccharide.
31. The method of treating a subterranean zone according to claim 30 wherein the viscosity increasing polymer comprises a polysaccharide selected from the group consisting of biopolymers and modified gums or celluloses and derivatives thereof.
32. The method of treating a subterranean zone according to claim 31 wherein the viscosity increasing polymer comprises xanthan gum.
33. The method of treating a subterranean zone according to claim 22 wherein the temperature of the subterranean zone ranges from about 80°F to about 150°F.
34. A treating fluid composition comprising:
water, a viscosity increasing polymer and a water-soluble strongly delayed polymer breaker composition, comprising a hydrogen peroxide source, a ferrous ion source and a chelating agent.
35. The treating fluid composition according to claim 34 wherein the hydrogen peroxide source is selected from the group consisting of sodium perborate tetrahydrate and hydrogen peroxide.

36. The treating fluid composition according to claim 34 wherein the ferrous ion source is selected from the group consisting of iron (II) sulfate heptahydrate, iron (II) chloride and iron (II) gluconate.
37. The treating fluid composition according to claim 34 wherein the chelating agent is selected from the group consisting of citric acid, sodium citrate and iminodiacetic acid.
38. The treating fluid composition according to claim 34 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar excess of the chelating agent relative to the ferrous ion source.
39. The treating fluid composition according to claim 38 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar ratio of the chelating agent to the ferrous ion source of from 3:1 to 6:1.
40. The treating fluid composition according to claim 34 wherein the water-soluble, strongly delayed polymer breaker composition further comprises sodium chloride.
41. The treating fluid composition according to claim 34 wherein the water-soluble, strongly delayed polymer breaker composition has a pH in the range of from about 3 to about 7.
42. The treating fluid composition according to claim 34 wherein the viscosity increasing polymer comprises a polysaccharide.
43. The treating fluid composition according to claim 42 wherein the viscosity increasing polymer comprises a polysaccharide selected from the group consisting of biopolymers and modified gums or celluloses and derivatives thereof.
44. The treating fluid composition according to claim 43 wherein the viscosity increasing polymer comprises xanthan gum.

45. The treating fluid composition according to claim 34 wherein the temperature of the subterranean zone ranges from about 80°F to about 150°F.

46. A treating fluid composition comprising:

water and a water-soluble strongly delayed polymer breaker composition, comprising a hydrogen peroxide source, a ferrous ion source and a chelating agent.

47. The treating fluid composition according to claim 46 wherein the hydrogen peroxide source is selected from the group consisting of sodium perborate tetrahydrate and hydrogen peroxide.

48. The treating fluid composition according to claim 46 wherein the ferrous ion source is selected from the group consisting of iron (II) sulfate heptahydrate, iron (II) chloride and iron (II) gluconate.

49. The treating fluid composition according to claim 46 wherein the chelating agent is selected from the group consisting of citric acid, sodium citrate and iminodiacetic acid.

50. The treating fluid composition according to claim 46 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar excess of the chelating agent relative to the ferrous ion source.

51. The treating fluid composition according to claim 50 wherein the water-soluble, strongly delayed polymer breaker composition comprises a molar ratio of the chelating agent to the ferrous ion source of from 3:1 to 6:1.

52. The treating fluid composition according to claim 46 wherein the water-soluble, strongly delayed polymer breaker composition further comprises sodium chloride.

53. The treating fluid composition according to claim 46 wherein the water-soluble, strongly delayed polymer breaker composition has a pH in the range of from about 3 to about 7.

54. The treating fluid composition according to claim 46 wherein the temperature of the subterranean zone ranges from about 80°F to about 150°F.